

**ATTACHMENT A
BIORETENTION SWALE
MAINTENANCE SPECIFICATIONS**

- 1) Bioretention Swales and appurtenances shall be maintained in good working condition acceptable to the County.
- 2) The Bioretention Swales and appurtenances shall be privately owned and maintained.
- 3) Bioretention Swales and appurtenances shall be inspected in accordance with the following schedule by a qualified individual to ensure that they operate in good working condition acceptable to the County. Items in need of repair shall be promptly addressed.
 - Embankment settling, woody growth, and signs of piping (annually)
 - Signs of seepage on the downstream face of the embankment (annually)
 - Condition of grass cover on the embankment and perimeter (annually)
 - Riprap displacement or failure (annually)
 - Outlet (annually)
 - Outlet channel conditions (annually)
 - Inlet pipe conditions (annually)
 - Safety features of the facility (annually)
 - Access for maintenance equipment (annually)
 - Observation well (annually)
 - Sediment accumulation (monthly)
 - Debris and trash accumulation (monthly)
 - Erosion in bioretention area and on the embankment (yearly or after major rain event)
 - Species distribution/survival for plantings shown on the design plans essential to the pollutant removal capability of the facility (twice per year)
 - Condition of mulch (biannually)
 - Condition of grass buffer (biannually)
- 4) The pH of the soil shall be tested annually. The pH level of the soil shall be maintained as neutral (within a pH range of 6.5 to 7.5). Limestone shall be spread over the bioretention facility if the soil pH is less than 6.5.
- 5) The mulch layer and soils shall be examined for evidence of hydrocarbons or other deleterious materials if the plant community experiences unsatisfactory growth or mortality. Any contaminated mulch shall be removed and replaced with clean mulch. In the event of persistent unsatisfactory growth, the soils shall be tested as needed for hydrocarbons or other toxic substances. If excess levels of these toxic substances are encountered, then the soils, plants and mulch shall be replaced as needed in conformance with the approved construction plans. The mulch shall be raked and scarified on an annual basis.
- 6) Trees and shrubs shall be mulched to a minimum thickness of 3 inches. Mulch shall be raked and scarified annually. Mulch shall be removed and replaced every three years. Ground cover specified as plugs shall be installed after the area has been mulched. Ground cover established by seeding and/or consisting of grass shall not be covered with mulch.
- 7) Watering of plant material shall be performed as needed to ensure survival.

89) The swales side slopes shall be mowed at least twice during the Spring, at least once during the Summer, and at least twice during the Fall to discourage woody growth with the last cutting occurring at the end of the growing season. The grass should not be cut to less than 6 to 8 inches in height.

9) If necessary, the embankment shall be limed, fertilized and seeded in the fall, after the growing season. Lime and fertilizer application rates shall be based on soil test results. The type of seed should be consistent with that originally specified on the construction plans.

10) All erosion gullies noted during the growing season shall be backfilled with topsoil, reseeded and protected (mulched) until vegetation is established.

11) All bare areas and pathways on the embankment shall be promptly seeded and protected (mulched) or otherwise stabilized to eliminate the potential for erosion.

12) All animal burrows shall be backfilled and compacted and burrowing animals shall be removed from the area.

13) All trees, woody vegetation and other deep-rooted growth, including stumps and associated root systems, shall be removed from the embankment. The root systems shall be extracted and the excavated volume replaced and compacted with material similar to the surrounding area. All seedlings shall be removed at the first opportunity. Similarly, any vine cover and brush shall be removed from the embankment to allow for inspections.

14) A reinforcement planting for the vegetation shown on the design plans, essential to the pollutant removal capability of the facility, shall be scheduled at the onset of the second growing season after construction. The size and species for the reinforcement plantings shall be based on an inspection of the growth and survival of the plantings at the end of the first growing season.

15) Water shall not be allowed to pond on the surface of the basin for more than 48 hours after a storm. Water ponding more than 48 hours after a storm is an indication that the underlying soil interface is clogged. Any evidence of clogging of the underlying soil interface shall be investigated and promptly addressed.

16) Sediment which accumulates within the swale(s) shall be manually removed and the vegetation reestablished. If accumulated sediment has clogged the surface pores of the swale, reducing or eliminating the infiltration capacity, then the surface shall be tilled and restabilized. Drilling or punching small holes into the surface layer can be used instead of tilling, if desired.

17) The owner shall provide an annual report of inspections and maintenance activities including a fiscal summary of budgeted and actual expenditures to the County (Maintenance and Stormwater Management Division) within 45 days of the end of the calendar year. The annual report shall include the names, addresses, telephone numbers, and other available means of contact (FAX numbers and email addresses) of the current owner(s) and the individual(s) responsible for maintenance of the facility. Inspection and maintenance records also shall be kept on-site or at a location that is readily accessible and shall be made available to County officials upon request.